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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,396	02/06/2004	Kenneth A. McQueeney	66396-077	5025
7590	04/27/2005			EXAMINER
McDERMOTT, WILL & EMERY				NATALINI, JEFF WILLIAM
600 13th Street, N.W.				
Washington, DC 20005-3096			ART UNIT	PAPER NUMBER
			2858	

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/772,396	MCQUEENEY ET AL. <i>(CM)</i>	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeff Natalini	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,13,14 and 16 is/are rejected.
- 7) Claim(s) 3-12, 15, and 17-21 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/6/04</u> . | 6) <input type="checkbox"/> Other: _____  |

***Specification***

1. The disclosure is objected to because of the following informalities:
  - On pg 8 line 7 and 8, it is stated that in figures 4a-d, a sensor metallization (309) is shown, there is no number 309 in any of these figures, so either one of these figures needs to include the sensor metallization (309) or the reference to 309 needs to be deleted from this part of the abstract.

Appropriate correction is required.

***Claim Objections***

2. Claims 3 and 15 are objected to because of the following informalities:
  - In regard to claim 3, line 3 of this claim states "substrate having and having at least", "and having" should be deleted so it will read "the substrate having at least".
  - In regard to claim 15, the second paragraph "adjusting a portion of the capacitive ... to about 20 kV" is word for word in claim 14, which claim 15 depends from. So the limitation is already in the claim dependency and does not need to be repeated.

Appropriate correction is required.

***Double Patenting***

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11

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F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4 and 24 of copending Application No. 10/391633. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 24 discloses a sensor for an ignition testing apparatus is disclosed having the signal detector (substrate) that is detachably mounted to the housing, a displacement assembly that is able to be moved at least one of toward the housing or away from the housing (moving between a first position and second position would be either moving toward or away from the housing) and a signal outputting element (reporting system), claim 24 does not further describe the signal processor (substrate), but claim 4 further describes the signal processor (substrate) as having one plate connected to ground and the other to a signal.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fong et al. (6396277) in view of James et al. (5493496).

In regard to claim 1, Fong et al. discloses a capacitive sensor for ignition testing comprising: a substrate bearing a sensor metallization and a ground metallization (abstract); a mounting device integrated with the substrate and configured to permit the substrate to be releasably mounted to an ignition coil housing (fig 1; col 5 line 18-25); a signal outputting element (col 5 line 10-11).

Fong et al. lacks a sensor displacement assembly integrated with either the substrate or the mounting device wherein one member is configured to move at least a portion of the sensor metallization either: toward the ignition coil housing, away from the ignition coil housing, or lateral to an ignition coil housing, while the substrate is mounted on the housing.

James et al. discloses a sensor displacement assembly integrated where the substrate (figs 1 and 2 (16)) is configured to move at least a portion of the sensor metallization (18) either toward the ignition coil housing, away from the ignition coil housing, or lateral to an ignition coil housing, while the substrate is mounted on the housing (fig 2 shows the substrate (16) moving along (sliding) the housing while being

mounted to the housing (10), and the sensor (18) being on the substrate is also moving in proportion, as the substrate gets close to the housing (as seen in figure 1) it would be moving closer, while on the housing it would be moving lateral, and when it slides all the way through and out the other end it would be moving away from the housing; col 3 line 66 – col 4 line 16).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Fong et al. to have an assembly configured to move the substrate either: toward the ignition coil housing, away from the housing, or lateral to the housing, while the substrate is mounted to the housing as taught by James et al. in order to have a reliable method/apparatus allowing for engine diagnostics (col 2 line 23-26).

In regard to claim 2, Fong et al. discloses wherein the sensor metallization is formed adjacent a first side of the substrate, and the ground metallization is formed adjacent a second side of the substrate (abstract 3<sup>rd</sup> sentence).

In regard to claim 13, Fong et al. discloses wherein signal outputting element is a cable (col 5 line 10-11).

In regard to claim 14, Fong et al. discloses a method for testing comprising: mounting in an initial position on an ignition coil housing a capacitive sensor (col 3 line 11-19) comprising: a substrate bearing a sensor metallization and a ground metallization (abstract); a mounting device integrated with the substrate and configured to permit the substrate to be releasably mounted to an ignition coil housing (fig 1; col 5 line 18-25); a signal outputting element (col 5 line 10-11); where the output lead of the

capacitive adapter is connected to an engine analyzer (col 5 line 10-11); measuring a firing line signal output by the ignition coil using the capacitive adaptor (col 6 line 54-58); the firing signal in a range of about 5 kV to 20 kV (col 1 line 14-17, more than 4 kV would fall into the range of about 5kV to 20kV).

Fong et al. lacks a sensor displacement assembly integrated with either the substrate or the mounting device wherein one member is configured to move at least a portion of the sensor metallization either: toward the ignition coil housing, away from the ignition coil housing, or lateral to an ignition coil housing, while the substrate is mounted on the housing; also he lacks adjusting the position by moving the capacitive sensor metallization relative to the ignition coil housing by moving in a direction toward, away, or lateral.

James et al. discloses a sensor displacement assembly integrated where the substrate (figs 1 and 2 (16)) is configured to move at least a portion of the sensor metallization (18) either toward the ignition coil housing, away from the ignition coil housing, or lateral to an ignition coil housing, while the substrate is mounted on the housing (fig 2 shows the substrate (16) moving along (sliding) the housing while being mounted to the housing (10), and the sensor (18) being on the substrate is also moving in proportion, as the substrate gets close to the housing (as seen in figure 1) it would be moving closer, while on the housing it would be moving lateral, and when it slides all the way through and out the other end it would be moving away from the housing; col 3 line 66 – col 4 line 16).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Fong et al. to have an assembly configured to move the substrate either: toward the ignition coil housing, away from the housing, or lateral to the housing, while the substrate is mounted to the housing as taught by James et al. in order to have a reliable method/apparatus allowing for engine diagnostics (col 2 line 23-26).

It is known in the art that moving a capacitive sensor around a coil will change the strength of the magnetic field from the coil, and so in adjusting the substrate as taught by James et al. the peak firing line signal will change, and it is obvious from the teaching of Fong et al. to keep it above 4 kV in order to ignite the air fuel mixture inside of the cylinders (col 1 line 16-17).

In regard to claim 16, Fong et al. as modified lacks specifically stating wherein the adjustment in claim 14 above will be done to obtain a range of about 9 kV to about 11 kV.

MPEP 2144.05 IIB states that a particular parameter must first be recognized as a result effective variable, i.e., a variable which achieves a recognizable result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Fong et al. as modified to obtain a range of about 9 kV to about 11 kV in order to achieve a result effective variable.

***Allowable Subject Matter***

6. Claims 3-12, 15, and 17-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regard to claim 3, the prior art does not teach or render obvious wherein the sensor displacement assembly comprises a movable first member disposed at an angle to the substrate having at least a first end portion adapted to assume and maintain any of a plurality of positions projecting beyond the second side of the substrate in the combination as claimed.

In regard to claim 15, the prior art does not teach or render obvious wherein a boost plug is attached to the output lead if adjustment of a position of the capacitive adapter sensor metallization relative to the ignition coil housing does not yield a first measured peak firing line signal greater than about 5 kV in the combination as claimed.

In regard to claim 18, the prior art does not teach or render obvious wherein a comparing the capacitive adapter is moved to a similar position on each of a plurality of ignition coil housings; and a firing line magnitude of each of the tested ignition coils is compared to determine whether a difference between any two cylinders exceeds about 10% of the first measured peak firing line signal.

Claims 4-12, 17, and 19-21, depend from these above objected to claims, and would be allowable if the above claims were rewritten as described above.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Becker et al. (5004984) teaches multiple position sensors at different positions are dispersed over an ignition system.
- Dittmann et al. (5444376) teaches detecting high voltage characteristics of an ignition coil system comprising multiple ignition coils.
- Maruyama et al. (5419300) teaches an ignition coil that has a ignition voltage detective capacitor for an internal combustion engine.
- Tozzi (6408242) teaches increasing the firing line signal of an ignition circuit based on a spark energy correction signal by a computer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini



V. Nguyen  
4/22/05

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PRIMARY EXAMINER